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limited pigment expansion was observed in the light-adapted eyes of the lizard.

With the exception of the early results of Angelucci ('78), who maintained that definite pigment movements occur in the rabbit, there exists only one positive record for mammals—that of Chiarini ('06), describing slight changes in the retina of dogs which had been exposed to direct sunlight and to darkness. The pigment of the light-adapted animals extended in short fringe-like processes between the rods, in contrast to the densely contracted pigment of the reciprocal set. Finally, Garten ('07)<sup>12</sup> carried out carefully executed experiments upon the ape, ox, rabbit and rat, yet failed to observe any striking differences between the effects of light and darkness; however, in the retina of the ape, which has a minute amount of pigment, composed of needle-like granules, the pigment was extended 3 to 4 granules deep in the light and only 2 to 3 granules deep in the dark.

When, in connection with experimentation upon the retinal pigment and visual cells of certain lower vertebrates, it became necessary to review the literature of this subject, I was at once impressed with the discrepancy between the statements found in many standard texts and the actual status of our knowledge, which, I believe, has been correctly summarized in the preceding paragraphs.

That slight positional changes due to photic stimulation have been detected in the retinal pigment of certain mammals, is probably true, but no evidence has yet been presented to show that a like condition holds for man. Moreover, if, in the future, such responses are demonstrated, the results upon other mammals (cf. Garten's experimentation upon apes) would lead us to expect them to be extremely limited. Since it follows, therefore, that the loose phraseology and the misstatements to be found in many standard text-books necessarily create fundamentally wrong impressions in the mind of the reader, it is evident that the

future editions of all offending texts should avoid lending aid to the perpetuation of this popular misconception.

A phenomenon related to that of pigment migration is the contractility exhibited by a definite portion of the inner member of rods and cones. The so-called "myoid" of the cone-visual cell shortens to a marked degree when, in the case of many fishes and of some amphibians and birds, the retina is exposed to light. Among reptiles and mammals, changes in the length of the cone myoid are hard to observe, yet in both groups responses to light have apparently been detected in a few instances.

Among mammals, the results of Stort ('87) on the pig stand alone in ascribing striking positional changes to the cones; Stort's measurements of one dark-adapted human eye, moreover, do not prove that movements of the cones occur in man. Chiarini ('06) obtained negative results on the dog's eye, although Garten ('07), by careful experimentation upon apes, has been able to demonstrate slight changes in the region of the fovea. The assumption, on the part of writers, of the occurrence of movements in the cones of man has been relatively rare.

The rod myoids of certain fishes, amphibians and birds are likewise responsive when stimulated by light, yet nothing has been recorded concerning the existence of this phenomenon in mammals.

It is possible, as Garten ('07) suggests, that the changes in the retinal pigment and visual cells of mammals occur so quickly that the fixing fluids through slowness of penetration fail to preserve them in an extended condition.

LESLIE B. AREY

#### THE CONVOCATION WEEK MEETINGS OF SCIENTIFIC SOCIETIES

THE American Association for the Advancement of Science and the national scientific societies named below will meet at Columbus, Ohio, during convocation week, beginning on Monday, December 27, 1915:

*American Association for the Advancement of Science.*—President Dr. W. W. Campbell, Director Lick Observatory; retiring president, Dr.

<sup>12</sup> Garten, S., 1907, "Graefe-Saemisch, Handb. d. gesam. Augenheilkunde," Bd. 3, Kap. 12, Anhang.

Charles W. Eliot, Harvard University; permanent secretary, Dr. L. O. Howard, Smithsonian Institution, Washington, D. C.; general secretary, Mr. Henry Skinner, Academy of Natural Sciences, Logan Square, Philadelphia, Pa.; secretary of the council, Professor W. E. Henderson, Ohio State University.

*Section A—Mathematics and Astronomy.*—Vice-president, Professor A. O. Leuschner, University of California; secretary, Professor Forest R. Moulton, University of Chicago, Chicago, Ill.

*Section B—Physics.*—Vice-president, Professor Frederick Slate, University of California; secretary, Dr. W. J. Humphreys, U. S. Weather Bureau, Washington, D. C.

*Section C—Chemistry.*—Vice-president, Professor W. McPherson, Ohio State University; secretary, Dr. John Johnston, Geophysical Laboratory, Washington, D. C.

*Section D—Mechanical Science and Engineering.*—Vice-president, Bion J. Arnold, Chicago; secretary, Professor Arthur H. Blanchard, Columbia University, New York City.

*Section E—Geology and Geography.*—Vice-president, Professor C. S. Prosser, Ohio State University; secretary, Professor George F. Kay, University of Iowa.

*Section F—Zoology.*—Vice-president, Professor V. L. Kellogg, Stanford University; secretary, Professor Herbert V. Neal, Tufts College, Mass.

*Section G—Botany.*—Vice-president, Professor W. A. Setchell, University of California; secretary, Professor W. J. V. Osterhout, Harvard University, Cambridge, Mass.

*Section H—Anthropology and Psychology.*—Vice-president, Professor G. M. Stratton, University of California; secretary, Professor George Grant MacCurdy, Yale University; New Haven, Conn.

*Section I—Social and Economic Science.*—Vice-president, Geo. F. Kunz, New York; secretary, Seymour C. Loomis, 69 Church St., New Haven, Conn.

*Section K—Physiology and Experimental Medicine.*—Vice-president, Professor F. P. Gay, University of California; secretary, Professor C. E. A. Winslow, Yale University.

*Section L—Education.*—Vice-president, Professor E. P. Cubberley, Stanford University; secretary, Dr. Stuart A. Courtis, Detroit, Mich.

*Section M—Agriculture.*—Vice-president, Professor Eugene Davenport, University of Illinois; secretary, Dr. E. W. Allen, U. S. Department of Agriculture, Washington, D. C.

## COLUMBUS

*The American Physical Society.*—December 28–30. President, Professor Ernest Merritt, Cornell University; secretary, Professor A. D. Cole, Ohio State University, Columbus, Ohio.

*The American Federation of Teachers of the Mathematical and the Natural Sciences.*—Secretary, Dr. Wm. A. Hedrick, McKinley Manual Training School, Washington, D. C.

*The American Society of Naturalists.*—December 30. President, Professor Frank R. Lillie, University of Chicago; secretary, Dr. Bradley M. Davis, University of Pennsylvania, Philadelphia, Pa.

*The American Society of Zoologists.*—December 28–30. President, Professor William A. Locy, Northwestern University; secretary, Dr. Caswell Grave, The Johns Hopkins University, Baltimore, Md.

*The Entomological Society of America.*—December 29–31. President, Professor Vernon L. Kellogg, Stanford University; secretary, Professor Alexander D. MacGillivray, 603 West Michigan Ave., Urbana, Ill.

*The American Association of Economic Entomologists.*—December 27–30. President, Professor Glen W. Herrick, Cornell University; secretary, A. F. Burgess, Melrose Highlands, Mass.

*The Botanical Society of America.*—President, Professor John M. Coulter, University of Chicago; secretary, H. H. Bartlett, 335 Packard St., Ann Arbor, Mich.

*The American Phytopathological Society.*—December 28–31. President, Professor H. H. Whetzel, Cornell University; secretary, Dr. C. L. Shear, U. S. Department of Agriculture, Washington, D. C.

*American Nature-Study Society.*—December 30–31. President, Dr. L. H. Bailey, Ithaca, N. Y.; secretary, Professor E. R. Downing, University of Chicago, Chicago, Ill.

*School Garden Association of America.*—December 29–30. President, Van Evrie Kilpatrick, 124 West 30th St., New York, N. Y.

*American Association of Official Horticultural Inspectors.*—December 28–29. Chairman, W. E. Rumsey, Morgantown, W. Va.; secretary, Professor J. G. Saunders, State Capitol, Madison, Wis.

*The American Microscopical Society.*—December 29. President, Professor Chas. A. Kofoid, University of California; secretary, T. W. Gallo-way, James Millikin University, Decatur, Ill.

*American Mathematical Society* (Chicago Section).—December 30 to January 1. Chairman, Professor E. J. Wilczynski, University of Chicago; secretary, Professor H. E. Slaught, 5548 Kenwood Avenue, Chicago, Ill.

*The Southern Society for Philosophy and Psychology*.—December 28–30. President, Professor J. C. Barnes, Maryville College; secretary, Professor L. R. Geissler, University of Georgia, Athens, Ga.

*Botanists of the Central States*.—Will hold no separate meeting, but will present its papers in connection with Section G. President, Professor H. C. Cowles, University of Chicago; secretary, Dr. Edward A. Burt, Missouri Botanical Garden, St. Louis, Mo.

*Society for Horticultural Science*.—December 28–29. President, W. L. Howard; secretary, Professor C. P. Close, College Park, Maryland.

*Association of Official Seed Analysts of North America*.—December 28 and 29. President, W. L. Oswald; secretary, John P. Heylar, Agricultural Experiment Station, New Brunswick, N. J.

*Society of Sigma XI*.—December 28. President, Chas. S. Howe, Case School; secretary, Professor Henry B. Ward, University of Illinois, Urbana, Ill.

#### BOSTON

*The American Physiological Society*.—December 27–29. President, Professor W. B. Cannon, Harvard Medical School, Boston, Mass.; secretary, Professor Chas. W. Greene, University of Missouri, Columbia, Mo.

*The American Society of Biological Chemists*.—December 27–30. President, Professor Walter Jones, The Johns Hopkins University; secretary, Professor Philip A. Shaffer, Washington University Medical School, St. Louis, Mo.

*The Society of Pharmacology and Experimental Therapeutics*.—December 27–29. President, Dr. Torald Sollmann, Western Reserve University Medical School, Cleveland, Ohio; secretary, Dr. John Auer, Rockefeller Institute for Medical Research, New York City.

#### WASHINGTON, D. C.

*The Geological Society of America*.—December 28–30. President, Professor A. P. Coleman, University of Toronto; secretary, Dr. Edmund Otis Hovey, American Museum of Natural History, New York City.

*The Association of American Geographers*.—December 30–January 1. President, Professor R. E. Dodge, Teachers College, Columbia University;

secretary, Dr. Isaiah Bowman, Broadway and 156th St., New York City.

*The Paleontological Society*.—December 29–30. President, Dr. E. O. Ulrich, U. S. Geological Survey; secretary, Dr. R. S. Bassler, U. S. National Museum, Washington, D. C.

*The American Anthropological Association*.—December 27–31. President, F. W. Hodge, Bureau of American Ethnology; secretary, Professor George Grant MacCurdy, Yale University, New Haven, Conn.

*The American Folk-Lore Society*.—Convocation Week. President, Dr. P. E. Goddard, American Museum of Natural History, New York City; secretary, Dr. Charles Peabody, 197 Brattle St., Cambridge, Mass.

*The American Economic Association*.—December 28–30. President, Professor W. F. Willcox, Cornell University; secretary, Professor Allyn A. Young, Cornell University, Ithaca, N. Y.

*The American Sociological Society*.—December 28–31. President, Professor E. A. Ross, University of Wisconsin; secretary, Professor Scott E. W. Bedford, University of Chicago, Chicago, Ill.

#### NEW HAVEN

*The Association of American Anatomists*.—December 28–30. President, Professor G. Carl Huber, University of Michigan; secretary, Dr. Charles R. Stockard, Cornell University Medical School, New York City.

#### URBANA

*The Society of American Bacteriologists*.—December 28–30. President, Dr. D. H. Bergey, University of Pennsylvania; secretary, Dr. A. Parker Hitchens, Glenolden, Pa.

#### NEW YORK CITY

*The American Mathematical Society*.—December 27–28. President, Professor E. W. Brown, Yale University; secretary, Professor F. N. Cole, 501 West 116th St., New York City.

#### CHICAGO

*The American Psychological Association*.—December 28–30. President, Professor John B. Watson, The Johns Hopkins University; secretary, Professor R. M. Ogden, University of Kansas, Lawrence, Kansas.

#### PHILADELPHIA

*The American Philosophical Association*.—December 28–30. President, Professor A. C. Armstrong, Wesleyan University; secretary, Professor E. G. Spaulding, Princeton, N. J.